



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,857	09/25/2003	Sameer S. Marathe	03-106	2330

719 7590 10/27/2005

CATERPILLAR INC.
100 N.E. ADAMS STREET
PATENT DEPT.
PEORIA, IL 616296490

EXAMINER

SCHWARTZ, CHRISTOPHER P

ART UNIT	PAPER NUMBER
----------	--------------

3683

DATE MAILED: 10/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/670,857

Applicant(s)

MARATHE, SAMEER S.

Examiner

Christopher P. Schwartz

Art Unit

3683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 11 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 10, 15-24 and 28-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 10, 15-24 and 28-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

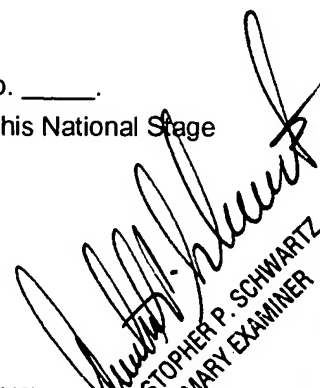
- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____


CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER

DETAILED ACTION

1. Applicant's amendment filed 8/11/05 has been received and considered. Claims 1,10,15-24,28-34 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,10,15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii in view of Nitta et al. and Nakamura et al.

Regarding claims 1,10 as broadly claimed, Ishii discloses a monitoring apparatus for a brake system comprising a pressure detection device 11 for detecting the pressure in an accumulator 7 (having a pre-charge pressure) and a monitoring device 13. Note also the functioning of the pressure gradient calculating means 21 (see bottom of col. 8). As discussed in column 9 lines 17+ "If the gradient of pressure depression is larger than the set value (beta), the pressure in the accumulator 7 cannot normally be lowered. Thus, a determination is made that an abnormal condition has been encountered (in many cases, an abnormal condition such as leakage of solution in the accumulator 7). Similarly if a case in which the gradient of pressure depression is larger than the set value (beta) is sequentially occurs predetermined number of times, an abnormal

condition is decided.” From these statements it can be seen that a sampling of the pressure levels in the accumulator must take place in order to detect an abnormal condition therein.

Ishii does discuss calculating a pressure gradient as discussed at the bottom of column 8, column 10 lines 10-15 and column 11 lines 49-54 and that the “abnormal condition” is determined only when it has been detected several times. This is to avoid an incorrect determination of an abnormal condition. Note that the timer begins when the switch is turned on, col. 13 lines 54-58. If the abnormal condition is detected the maximum speed of the vehicle is limited, col. 23 lines 24+. It therefore appears that the brake pressure monitoring system of Ishii functions during operation of the vehicle.

Although presumed to be inherent in Ishii, lacking is a specific discussion of using a pressure limit, or threshold value, to generate a fault signal. Also lacking is a discussion of measuring the pressure of the hydraulic braking fluid and using this measure pressure value to determine the “pre-charge” pressure of the gas in the gas (chamber) of the accumulator. The examiner takes this to mean simply using the measurement of hydraulic fluid pressure in the accumulator to determine the pressure in the gas chamber.

The reference to Nitta et al. (see prior art discussion in columns 1 and 2) or Okochi et al. (see col 7) teach the notoriously well known idea of using target or predetermined levels.

The reference to Nakamura et al. teaches the known idea of using either the hydraulic pressure or the gas pressure in the accumulator to determine the working

Art Unit: 3683

status of the accumulator. See the discussion in columns 1 and 2, but particularly lines 58-61 of col. 2. See also col. 4 lines 50-55. *It is also noted that at page 4 of applicants disclosure that the pressure detection device may be coupled to either the gas or hydraulic chambers of the accumulator. Therefore there is no specific requirement that the pressure of the hydraulic fluid in the accumulator must be measured to produce the claimed output signal to determine the "precharge" gas pressure.*

It would have been obvious to have incorporated these teachings into the device of Ishii as such a modification would merely amount to an alternate equivalent to the method of Ishii of detecting an abnormality with the pressure level in the accumulator and supplying the accumulator with a "precharge" pressure by controlling the cut-in and cut-out times of the pump should the accumulator develop a leak..

Regarding claims 15-17,21-22 these requirements are met by the combined teachings above.

4. Claims 18,20,23-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii, as modified above, and further in view of Holst et al. ('311) or Inagawa et al. and further in view of Sekigawa et al. or Harris et al.

Ishii lacks a specific discussion of sampling the output signal of the pressure detection device 11 at pre-determined intervals during operation of the vehicle.

The reference to Holst et al. '311 is relied upon to show it is well known in the art to "sample the output signal" from a pressure sensor for adjustment of the brake pressure in a brake cylinder. See columns 1 and 2.

The reference to Inagawa et al. although not specifically using the term "sampling" effectively meets applicants claimed limitation in cols 7 and 8. And with respect to the limitations of claim 18 see col 5 lines 40+ over to col. 6.

One having ordinary skill in the art at the time of the invention would have found it obvious to have continuously "sampled" the signal from the pressure sensor 11 in Ishii et al. at predetermined time intervals and to have compared these values to threshold values stored in the ECU 13 simply as an alternative equivalent method of determining an accurate abnormal pressure condition in the accumulator or system of Ishii et al. and controlling the cut-in and cut-out times of the pump should the accumulator develop a leak. Note figures 3a and 3b of Ishii et al.

Note also that the monitoring apparatus starts when the ignition switch is turned on. See column 13 lines 54-57 of Ishii.

Regarding claim 25 Ishii in view of Holst or Inagawa et al. are relied upon as above. Most accumulators in the art use a "precharge gas" in one of the chambers. Note element 7 in figure 1 where the accumulator is separated into two chambers - one of which appearing to be charged with gas. Notwithstanding the argument, the device of Sekigawa et al. or Harris et al. are relied upon to teach it is known to preload the accumulators as well as for their teaching of the pressure sensitive valves and cut-in and cut-out pressures to regulate fluid pressures within the accumulator to predetermined desired levels.

One having ordinary skill in the art at the time of the invention would have found it obvious to have incorporated the teachings of either Sekigawa et al. or Harris et al.

into the device of Ishii, as modified above, to regulate fluid pressure within the accumulator dependent upon such predetermined vehicle operating functions as (ABS, TC, VSC etc.).

Response to Arguments

5. Applicant's arguments with respect to claims 1,10,15-24,28-34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 3683

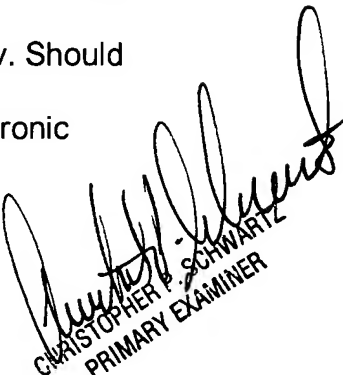
7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicants should review all of the prior art cited for showing similar concepts to that of applicants.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Schwartz whose telephone number is 571-272-7123. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James McClellan can be reached on 571-272-6786. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cps
10/24/05


CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER